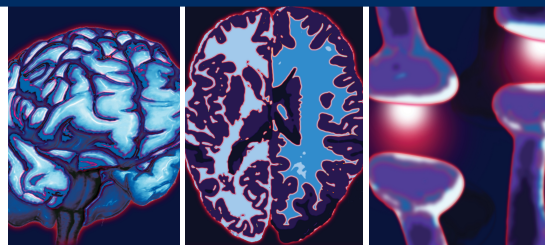


## CONFERENCE SCENE



# Advances in mindfulness research

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**The First International Conference on Mindfulness, Rome, Italy,  
8–12 May 2013**

The First International Conference on Mindfulness was held in Rome, Italy, in May 2013, sponsored by the American Health and Wellness Institute, Sapienza University (Rome, Italy) and the Associazione Italiana Mindfulness. Over 330 participants from a wide range of disciplines representing 35 countries attended this first European conference. In addition to scientific presentations, participants were able to attend experiential workshops, guided meditation sessions and contemplative symposia. This summary highlights the neuroscience presentations, evidence for application of mindfulness meditation to diverse clinical issues and populations, and the value of integrating contemporary and traditional practice and perspectives.

Research on the psychological impact of a range of meditation practices extends back for over 50 years, including studies of the clinical effects and underlying neurobiology [1–3]. Studies on mindfulness-based meditation practice has become the primary focus of this research over the last 20 years, with the scientific literature available growing exponentially over the last 10 years. Much of the focus has been on documenting the efficacy of mindfulness-based interventions in reducing the symptoms of various disorders, such as depression, anxiety and chronic pain, across an increasing range of populations.

Of significance, the growing sophistication of this research is markedly extending our understanding of how such effects may be occurring, both from a neuroscience perspective and in regards to establishing ‘mindfulness’ as a trainable cognitive state and trait. Finally, a strong inclination to disengage such practices from their historical spiritual contexts is beginning to shift, as the psychological value of these traditions becomes better recognized. This article will highlight how these areas were addressed at the First International Conference on Mindfulness (ICM; Rome, Italy) and briefly summarize recent evidence.

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## News & Views

News

Journal Watch

**Conference Scene**

Interview

One area strongly represented throughout the conference was the neurobiology of mindfulness and mindfulness meditation. With a growing body of supportive literature, researchers and clinicians have demonstrated that neural systems are modifiable networks and that changes in neural structure can be seen in adults as a result of specific training such as mindfulness. Beginning in 2005, with the application of functional MRI (fMRI) technology to meditation research, increases in gray matter in the brain have been demonstrated to be associated with skill acquisition, motor skills, cognitive skills and performance abilities in meditators [4,5]. With regards to mindfulness, fMRI studies demonstrated that gray matter increases were also observed after participants completed the widely used Mindfulness-Based Stress Reduction (MBSR) program developed by Jon Kabat-Zinn, ICM's plenary keynote speaker [6-8]. Data presented by Tal Dotan Ben-Soussan, Filippo Carducci, Claudia Piervincenzi, Concetta Gardi, Emiliano Santarnecchi, Enzo Egiziano and others throughout the conference added to the body of literature demonstrating structural changes in brain areas, including the posterior cingulate cortex and cerebellum. Results such as these provide further evidence of changes at the anatomical level as a result of learning, memory process, emotional regulation, self-referential processing and perspective taking tasks involving empathy.

One specific aspect of neuronal change associated with the application of mindfulness-based interventions are the neurobiological mechanisms involved in actively induced emotion regulation commonly associated with the prefrontally mediated downregulation of the amygdala [9]. Specifically of interest are the neurobiological correlates of mindfulness instruction during emotional arousal. Using fMRI, data were presented demonstrating that an 8-week mindfulness intervention designed for novice meditators who were provided minimal instruction and asked to focus on an experience was associated with increased activations in the prefrontal regions during the expectation of negative and potentially negative stimuli compared

with controls. During the perception of negative stimuli, reduced activation was identified in regions involved in emotion processing (i.e., amygdala and parahippocampal gyrus). Interestingly, prefrontal and right insular activation when expecting negative stimuli are lower with greater trait mindfulness. These and similar findings presented at the conference suggest the efficacy of emotion regulatory effects of a brief mindfulness intervention on a neurobiological level. Overall, these results are consistent with the overarching hypothesis that meditation may result in enduring, beneficial changes in brain function, especially in regard to emotional processing, which are mediated by shifts in attention [10-12].

Another area widely covered at the conference was the application of mindfulness-based interventions for specific symptoms and disorders. A 2007 survey conducted by the NIH Center for Complementary and Alternative Medicine (NCCAM) estimated that over 20 million people in the USA had used meditation in the past 12 months, an increase of over 30% since 2002 [10]. As it stands, meditation, in some form, is one of the most widely used, lasting and researched psychological disciplines worldwide [1]. Over the past 20 years there has been a considerable increase in the number of interventions based on meditation skills, especially those of mindfulness. From modest beginnings with the introduction of the MBSR program in 1979, the field of mindfulness has witnessed an exponential growth in clinics, universities, schools, hospitals, politics, management and our daily lives. Mindfulness-based procedures are now a part of mainstream clinical practice, used to alleviate a variety of psychological and physical conditions. The unifying theme of mindfulness is to relieve suffering by bringing one's complete attention to the present experience, thereby interrupting highly conditioned reactive processes, while facilitating more complex neurocognitive regulation.

Today, the clinical uses of mindfulness-based interventions are broad and have grown to include applications designed to address specific presenting issues, such as mood disorders, sexual dysfunction and

eating disorders [13,14], represented at the conference. One keynote presentation that illustrated the variety of clinical applications was by Mark Williams from Oxford University (Oxford, UK), who, along with colleagues John Teasdale and Zindel Segal, developed Mindfulness-Based Cognitive Therapy (MBCT) for prevention of relapse in depression [15]. Since its development, MBCT has now been used to help people with a wider range of disorders, including chronic fatigue syndrome, post-traumatic stress disorder and suicidal crises. In his presentation, Williams outlined the conceptual foundation of MBCT and reviewed data supporting its use to specifically address suicidal ideation within the context of a depressive episode. To illustrate the wide variety of applications of mindfulness-based interventions on specific symptoms or disorders, other data-based presentations during the conference examined the use of these interventions for anxiety disorders, trauma, personality disorders, cancer, obesity, and in organizational life, leadership and education.

The third area broadly represented at ICM was the use of mindfulness-based interventions among specific populations and settings. The application of mindfulness-based interventions among children was one particular focus. Susan Bogels' work involving mindfulness in parenting highlights this focus. Mindful parenting interventions are increasingly being used to help prevent and treat disorders in children to prevent parenting problems and to prevent intergenerational transmission of mental disorders from parents to children. Bogels and others also presented data regarding the use of mindfulness-based interventions for children with ADHD. Data collected during the studies measured ADHD and oppositional defiant disorder symptoms, and parental ADHD symptoms, stress, over-reactivity, permissiveness and mindful awareness. Overall, these studies found a significant reduction of parent-rated ADHD behavior for themselves and their child from baseline to follow-up, along with an increase in mindful awareness, and a reduction in parental stress and over-reactivity [16].

Other research presented involved children with autism, emotional disorders and intellectual disabilities. Data from these studies supported the clinical use of mindfulness to teach skills, reduce anxiety, improve attention, improve compliance and reduce problem behavior, even in intellectually disabled individuals [17]. Many studies presented also reported on the secondary, and often incidental, beneficial effects of mindfulness-based interventions on the parents or care-givers of the children in the investigations. Data regarding the use of mindfulness-based elder care were also a focus at the conference, with several papers presenting work on the use of MBSR-related interventions to help lower stress, and improve quality of care and social interactions among the elderly who live by themselves, those who live with support and those in nursing homes. Overall, the data presented at the conference regarding the use of mindfulness-based interventions among specific populations and settings were very encouraging.

Participants of ICM commented that one thing they appreciated, in particular, was the acknowledgement of the integration of science with dharma in the teaching of mindfulness, and that mindfulness cannot or should not be cut off from its source in the teachings of the Buddha [18]. When mindfulness meditation was introduced as a therapeutic intervention over 30 years ago, it might not have been taken seriously if the approach had been rooted in Buddhism rather than in science. However, now that the clinical value has been empirically established, the aspect of dharma as the foundation for mindfulness can be acknowledged. For example, morning-guided meditations provided by Ajahn Amaro, Dario Doshin Girolami and Henk Barendregt were included as part of the conference as experiential aspects where participants were able to listen and follow practiced meditators on the path towards experiencing mindfulness. There is also an increasing appreciation of the value of Buddhist psychology and, in parallel, a rapidly growing research base for recognizing spiritual engagement as a valid

and virtually universal aspect of human experience, and one that is documented to be fostered within meditation-based programs, even those that are primarily secular in their representation [19].

In summary, the purpose of this conference was to expand dialogue internationally regarding the growing evidence supporting the value of meditation-based interventions, particularly mindfulness meditation, and to further document the underlying neuroscience of these practices, traditionally recognized as being powerful in their potential for growth and transformation. The next conference is scheduled for May 2015 in Rome, Italy.

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